

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY



(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 15 FEB 2006

PCT/PTO

DUPLICATE

Applicant's or agent's file reference 20040261	<b>FOR FURTHER ACTION</b> See Form PCT/PEA/416	
International application No. PCT/ES2004/000260	International filing date (day/month/year) 07.06.2004	Priority date (day/month/year) 18.07.2003
International Patent Classification (IPC) or national classification and IPC H02B13/00		
Applicant ORMAZABAL Y CIA, S.A. et al.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 2 sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input checked="" type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand  19.04.2005	Date of completion of this report  12.01.2006	
Name and mailing address of the international preliminary examining authority:   European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer  Castanheira Nunes, F  Telephone No. +31 70 340-4297  	

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**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/ES2004/000260

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
    - ☐ international search (under Rules 12.3 and 23.1(b))
    - ☐ publication of the international application (under Rule 12.4)
    - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-9 as originally filed

**Claims, Numbers**

1-13 as originally filed

**Drawings, Sheets**

1/4-4/4 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
    - ☐ the description, pages
    - ☐ the claims, Nos.
    - ☐ the drawings, sheets/figs
    - ☐ the sequence listing *(specify)*:
    - ☐ any table(s) related to sequence listing *(specify)*:
  4. ☒ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
    - ☐ the description, pages
    - ☒ the claims, Nos. 1
    - ☐ the drawings, sheets/figs
    - ☐ the sequence listing *(specify)*:
    - ☐ any table(s) related to sequence listing *(specify)*:

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**INTERNATIONAL PRELIMINARY REPORT  
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International application No.  
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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or Industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	5,7-13
	No: Claims	1-4,6
Inventive step (IS)	Yes: Claims	
	No: Claims	1-13
Industrial applicability (IA)	Yes: Claims	1-13
	No: Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

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**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/ES2004/000260

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial  
applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

- D1: DE10119183 C1 (PFISTERER KONTAKTSYSTEM GMBH) 29 August 2002 (2002-08-29)  
D2: US2001/0006856 A1 (THIERRY STARCK) 5 July 2001 (2001-07-05)  
D3: DE4312261 A1 (ABB PATENT GMBH) 20 October 1994 (1994-10-20)  
D4: EP645782 A1 (GEC ALSTHOM) 29 March 1993 (1993-03-29)  
D5: DE4435864 A1 (KARL PFISTERER GMBH) 11 April 1996 (1996-04-11)

**1. INDEPENDENT CLAIM 1**

- 1.1 The amendments filed with the letter dated 26th of December 2005 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT. The amendment concerned is the one related to the mechanical protection device being independent of the union assembly and (of) the connectors. There is nothing in the filed application that refers or suggests that the mechanical protection device is "independent" (i.e., that it can be used for instance in an existent coupling system) from the union assembly. In fact, the recessed shape of the insulating shell suggests the use of the mechanical device and one of the embodiments of the invention (see description, page 6, lines 25-29 and figure 3) show a mechanical protection device that is "partially enclosed in a semiconductor material (3)" implying a inter-dependency of the elements forming the coupling system. This amendment has been disregarded by the examining division.
- 1.2 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.
- 1.3 The document D1 discloses (the references in parentheses applying to this document) a coupling system between high-voltage electrical equipment composed of a connector or union assembly which comprises an insulating shell (19) inside which are housed conducting elements (12,13), whose external surface is partially covered by a conducting layer (20, see paragraph 27) characterised in that it incorporates a mechanical protection device (21, see figure

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1 and paragraph 27) disposed surrounding the conducting layer (9). It is implicitly disclosed that the coiled spring ring 21 will protect the silicone rubber insulating element 19 on its exposed area against the impact of falling objects.

- 1.4 When assessing the broad and unspecific significance of the expression "a mechanical protection device disposed surrounding the conducting layer", it has been considered that any structure or device that surrounds or covers the conducting layer also offers and directly implies a degree of mechanical protection of such layer "against pricking objects and erosion of the semiconducting layer...".
- 1.5 D2 and D3 also possess the technical features of claim 1:  
D2: see paragraphs 21 and 22 about the semiconductive coating on the sleeve 12 and paragraph 35 and figure 7 about the toroidal current transformer 17. The transformer offers the mechanical protection to the sleeve 12.  
D3: see figure, conductive material 48 and the metallic rings 16 and 17 (column 3, lines 27-35). The retaining rings 16 and 17 keep in place the coupling system and protect the insulative shell against the sharp ends of the switchgear metallic walls 12 and 13.

## 2. DEPENDENT CLAIMS 2-13

Dependent claims 2-13 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty or inventive step.

- 2.1 D1 discloses a insulative shell 19, which outside surface is made conductive by means of a conductive layer (20), this layer to be connected to earth by a metallic ring 21. D2 allows the connection of a current transformer and D4 of a capacitive voltage sensor (cl. 4, 18-26). The possibility of using the connector assembly of D4 in a three-phase system is disclosed in column 7, lines 49-53.  
D5 discloses the use of a Rogowski coil together with a voltage sensor (see column 1, lines 3-33, column 5, line 4 - column 6, line 27 and figures 7-9).  
When considering the incorporation of a voltage sensor, the present application is clear about not referencing the insulative shell to earth (see filed application, page 5, lines 26-31, page 9, lines 1-6).

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**3. Remarks**

It would seem that the following technical features mentioned in the application, when considered together with the filed independent claim 1, would have a contribution over the above cited prior art that could be regarded as new and inventive:

-the mechanical protection device embraces said semi-conducting surface without any relative sliding between them (page 5, lines 7,8 of the description);

-the mechanical protection device incorporates sensor(s) that allow obtaining values of the current and/or voltage (page 5, lines 19-31).

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CLAIMS

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- 5 1. Coupling system between high-voltage electrical equipment composed of a connector or union assembly (1) that inserts in female connectors (5) of the high voltage equipment (4) which comprises an insulating shell (2) inside which are housed conducting elements, whose external surface is partially covered by a conducting or semi-conducting layer (3), characterised in that it incorporates a mechanical protection device (6) independent of the union assembly (1) and the connectors (5) and disposed surrounding the semi-conducting layer (3) and in contact with said semi-conducting layer (3).
- 10 2. Coupling system between high-voltage electrical equipment according to claim 1, characterised in that the protection device (3) consists of a conducting ring connected to earth.
- 15 3. Coupling system between high-voltage electrical equipment according to claim 2, characterised in that the conducting ring connected to earth is metallic.
- 20 4. Coupling system between high-voltage electrical equipment according to claim 1, characterised in that the protection device incorporates an inductive current sensor.
5. Coupling system between high-voltage electrical equipment according to claim 4, characterised in that the current sensor consists of a Rogowski coil.
- 25 6. Coupling system between high-voltage electrical equipment according to claim 4, characterised in that the current sensor consists of a winding (8)

about a magnetic core (7).

7. Coupling system between high-voltage electrical equipment according to the previous claims, characterised in that the protection device (6) incorporates a capacitive voltage sensor.
- 5 8. Coupling system between high-voltage electrical equipment according to claim 1, characterised in that the protection device (6) encompasses all the connectors (1) of the phases of the coupling system between high-voltage equipment.
- 10 9. Coupling system between high-voltage electrical equipment according to claim 8, characterised in that the protection device (6) consists of a conducting ring connected to earth.
- 10 10. Coupling system between high-voltage electrical equipment according to claim 9, characterised in that the conducting ring connected to earth is metallic.
- 15 11. Coupling system between high-voltage electrical equipment according to claim 8, characterised in that it comprises a current sensor that externally encompasses all phases.
- 20 12. Coupling system between high-voltage electrical equipment according to claim 11, characterised in that it comprises a current sensor for each phase.
13. Coupling system between high-voltage electrical equipment according to claims 8, 11 and 12, characterised in that it incorporates voltage detection for each phase of the main circuit.